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publication of Alder & Hancock's "British Tunicata." He has since completed it through the year 1910. He has added many titles to Herdmann's bibliographic list in his *Challenger* reports, which has been the standard bibliography for the Tunicata.

The bibliography is in the form of an author's index with full titles, with page references, and often with brief note as to contents. There are included not only works which deal exclusively or mainly with the Tunicata, as indicated in their titles, but very many works in which the reference to the Tunicata is not the main theme, general text-books being included in the list. Of course, no such list can possibly be entirely complete, but in this instance it is a remarkably full one and will be of great value to students of the group.

In several weeks' use of the bibliography the reviewer has noticed no inaccuracies and no omissions of any moment. It is a little unfortunate that about a tenth of the titles are placed in a supplementary list.

MAYNARD M. METCALF

OBERLIN, OHIO,
October 1, 1913

The Earth: Its Genesis and Evolution Considered in the Light of the Most Recent Scientific Research. By A. T. SWAINE. London.

Worthless is a very strong adjective to apply to a book which is almost a model in paper, typography and illustration. Yet just what is the value of a book whose author believes that vital force produces matter (p. 72), that thus the earth is slowly growing larger (p. 263), that the great cycles of sedimentation correspond to a filling up of the great ocean depths, a straw-colored siliceous ooze below 3,000 fathoms and red clays corresponding to the basal quartzites and red beds (p. 20), that up to the close of the Paleozoic the light and heat energy of the sun had not been experienced on earth (pp. 144-151), but that an increase in temperature of the earth's crust in cycles was due to igneous activity and outflow of heat from the interior, which evaporated a large amount of the ocean (pp. 89, 95, 109, 174, 183, 193)? Compared with these heresies, the theory that

sedimentary rocks are fused sediments (p. 54), that erosion and conglomerates are largely due to the wash of the evaporated ocean condensing again (p. 95) with the tidal waves caused by earth movement paroxysms (pp. 186, 213), the explanation of transgressive formations (p. 95), of laterite (p. 199) and of drumlins (p. 245) are but minor. The book shows, however, a wide acquaintance with recent and the best geological literature, though it is curious in a book that dwells so much on geologic cycles of sedimentation that no mention seems to be made of Newberry or Schuchert. It contains a mass of geological fact mixed with the author's unique views put in an interesting way.

Conceivably, it might be of use to give to a rather advanced student, inclined to swallow what he reads too easily, as an emetic, asking him to show why the facts advanced by the author do not support his theories.

ALFRED C. LANE

SCIENTIFIC JOURNALS AND ARTICLES

THE first number of the new *Journal of Agricultural Research* published by the U. S. Department of Agriculture was issued October 10. It consists of eighty-seven pages of letterpress and line drawings and five plates, including one color plate. The articles in the first number are:

"*Citrus ichangensis*, a Promising, Hardy, New Species from Southwestern China and Assam."

"*Cysticercus ovis*, the Cause of Tapeworm Cysts in Mutton."

"The Serpentine Leaf-Miner."

In the introduction, written by Dr. B. T. Gallo way, assistant secretary, the purposes of the journal are explained as follows: "The recent advances in the theory and practise of agriculture have come almost entirely from scientific research applied to agricultural problems. Accumulated results of centuries of painstaking studies have been drawn upon, and it has become evident that further improvement in agriculture calls for continued investigation of the most accurate and thorough nature. The first recognition of the economic value of progress in these investigations as well as the initial application of theories to practical prob-

lems comes usually from specialists. Indeed, only in rare instances is the significance of the results of scientific research apparent to farmers, since newly discovered facts are seldom directly applicable to agricultural conditions. The suggestive or the indirect value of reports of new work is usually of paramount economic importance; it is the purpose of the *Journal of Agricultural Research*, therefore, to record investigations bearing directly or indirectly upon economic conditions of agriculture." According to the foreword the journal for the first few issues will contain papers from the Department of Agriculture only. The later numbers, however, will probably include articles prepared and submitted by investigators in the state agricultural colleges and experiment stations. The book is highly technical in character and will not be circulated except among scientific specialists.

OCEANOGRAPHIC CRUISES OF THE U. S.
FISHERIES SCHOONER "GRAMPUS"
1912-1913

In the advance of the modern science of oceanography the coastal waters of the eastern seaboard of the United States have received little attention. But the introduction of new fishery methods, and the frequent reports of a diminution of food fishes along our coast add an economic to the purely scientific need for a close study of the physical features, and plankton, of our waters, such as has long been prosecuted in the North Sea by the nations bordering upon it. A beginning has been made along these lines by the U. S. Bureau of Fisheries, with the cooperation of the Museum of Comparative Zoology. And during the past two summers the Fisheries schooner *Grampus* has been detailed, in my charge, for oceanographic cruises which have so far extended from Nova Scotia to Chesapeake Bay, a brief outline of which is given here. In both years Mr. W. W. Welsh, of the bureau, has acted as my assistant.

In a sailing vessel, which the *Grampus* is primarily in spite of a small auxiliary gasoline engine, oceanographic work is necessarily carried on under difficulties. But

there was no steamer available. And fortunately we have enjoyed such exceptionally fine weather on both cruises that we worked to better advantage than might have been expected. Such operations as require the vessel to be stationary for any length of time, for example current measurements, were usually performed from a dory at anchor, though occasionally, if the sea was too rough, we anchored the vessel herself for this purpose. For hoisting purposes a gasoline winch was installed on deck. The equipment of the *Grampus* consisted, in 1912, of Negretti and Zambra reversing deep-sea thermometers, a Sigsbee and a stopcock water bottle; an Ekman current meter, a closing net for horizontal towing, described elsewhere,¹ quantitative nets of the Hensen pattern, a variety of ordinary tow nets, large and small, of various grades of silk, and an eight-foot beam trawl.

In 1913 we added a second current meter, two more stopcock water-bottles, a Helgoland "shear board" tow net, which proved to be the most effective of our nets, a three-foot tow net of the *Michael Sars* pattern and a Lucas sounding machine. On the other hand, we discarded the Sigsbee water bottle, which proved unreliable, and substituted an otter trawl for the beam trawl, a change which proved very advantageous.

In 1912 our cruise lasted from July 8 until August 31. We chose the Gulf of Maine as our first field of work partly because of its important fisheries, partly because it was nearly virgin ground so far as sub-surface temperatures, salinities and plankton were concerned, but chiefly because, being a partially isolated area, a comparatively complete survey could be made in the time at our disposal. The stations were planned to include Massachusetts Bay, the deep basin off Cape Ann and Cape Cod, the coastal waters and off-shore banks along the coast of Maine, and a line from Cape Elizabeth to Cape Sable, while a week was spent trawling in and near Casco Bay in cooperation with the Harpswell

¹ *Int. Rev. Hydrobiol. Hydrogr.*, 5: p. 576, 1913.